

Response to the NHFP Review (Updated on September 5, 2023)

EXECUTIVE SUMMARY

During the summer of 2021, a review of the NASA Hubble Fellowship Program (NHFP) was conducted to assist NASA in increasing the effectiveness of the program, and bolstering its excellence. The review focused on two main areas:

1. Success of the NHFP under its current structure
2. Diversity, equity, and inclusion of the program

A panel¹ was convened, comprised of a diverse group of astrophysicists and experts in diversity, equity, inclusion, and accessibility, and they conducted an extensive review of all aspects of the NHFP. The panel was co-chaired by Dr. Rita Sambruna, Deputy Director of the Astrophysics Division at Goddard Space Flight Center (GSFC) and Dr. Nicolle Zellner, Program Scientist in NASA Headquarters' (NASA HQ) Planetary Science Division. The panel prepared a report of its findings and the co-chairs developed a set of recommendations based on those findings. This report, "*The NASA Hubble Fellowship Program: A Review of 30 Years of Promoting Excellence in Astrophysics*" was released in January 2022 and can be found here, https://science.nasa.gov/science-pink/s3fs-public/atoms/files/Hubble-Fellowship-Review-Doc-2021-12-15_Tagged.pdf. The report highlights the many successes of the NASA Hubble Fellowship Program (NHFP) and its importance for the advancement of the field. However, the report also presents recommendations for further improving the program with particular emphasis on diversity, equity and inclusion.

The thirty-two recommendations developed by the panel co-chairs were presented in the report to NASA Astrophysics Division (hereafter denoted NASA Astrophysics) leadership at NASA Headquarters (NASA HQ). These recommendations were organized into five broad areas:

- Mission of the NHFP
 - o How aligned is the NHFP to Science Mission Directorate (SMD) values, particularly to Leadership and Inclusion?
- Management of the Program
 - o Are there improvements in the lines of communication and in the general management processes that can ensure a more efficient and effective Program?
- Application and Review Processes
 - o Are there barriers in the application process that prevent the applicant pool from being as broad and deep as possible?
 - o Are the processes in place for application evaluation and Fellow selection aligned to current best practices?
- Diversity and Accessibility of the Program
 - o How representative of the astrophysics community are the NHFP Fellows and their host institutions?
- Support of the Fellows

¹ The review committee consisted of: Rita Sambruna (GSFC), Nicolle Zellner (NASA HQ and Albion College), Marcel Agüeros (Columbia University), Kate Follette (University of Massachusetts), Stefanie Johnson (University of Colorado), N. Jeremy Kasdin (Princeton University), Xin Liu (University of Illinois), Sherard Robbins (Visceral Change), Keivan Stassun (Vanderbilt University), as well as Executive Secretaries Bianca Chavez (Purdue University) and Hannah Woods (Albion College).

- o How supportive of the Fellows' well-being and professional development is the NHFP?

Upon receipt of the report, the Director of the Astrophysics Division at the time (Dr. Paul Hertz) directed the NHFP Program Scientist (Dr. Patricia Knezek) to put together an implementation task force to develop an implementation plan and timeline in response to the report. The task force includes members of the NASA Astrophysics Division (Dr. Patricia Knezek, Dr. Hashima Hasan, Dr. Sangeeta Malhotra, Dr. Antonino Cucchiara), the NHFP Leads (Dr. Dawn Gelino, Dr. Andy Fruchter, Dr. Paul Green, Dr. Katey Alatalo), and NASA Goddard Space Flight Center (GSFC) managing partners (Dr. Jennifer Wiseman, Dr. Andrew Ptak and Mr. Pat Crouse).

The recommendations of the Review are wide-ranging and deep. The task force decided that while some recommendations could be started on immediately, for others it would be helpful to engage the wider astronomical community to obtain their thoughts on the impacts and relative priorities of the recommendations. It held a virtual webinar about the NHFP review & report in February 2022, after the January American Astronomical Society (AAS) was canceled. It then organized a hybrid splinter session at the June 2022 AAS to report on progress and obtain community feedback through a community feedback form that was widely shared among different communities and communication channels. This form focused on collecting opinions about prioritizing of the recommendations as well as further input on the possible consequences some of the recommendations may have on the program if they were to be implemented: it closed at the end of August 2022 and received more than 100 responses. The data were analyzed in the fall and winter of 2022 and the results were presented to the Astrophysics Division in January 2023 and to the astronomical community at the June 2023 AAS meeting. Also, as a result of this analysis, the taskforce developed a new community feedback form that centered on the needs and resources of early career astronomers and the role the NHFP may play in their scientific success as well as their ability to be active members of the broader community.. Data are ~~been~~ being collected in Summer 2023 and results will be presented at a Special Session at the winter American Astronomical Society meeting in New Orleans in January 2024.

Over the past two years the task force has taken actions to respond to some of the report recommendations as well as created a roadmap for the following fiscal years. Some actions were actually begun and/or implemented prior to formal receipt of the final report, and those are captured here as well. To date, with guidance from the task force, the NHFP program has implemented a series of activities that partially or entirely fulfill more than 30% of the review recommendations (12 out of 32 recommendations) and has initiated discussions between the NHFP Leads, NASA Astrophysics, and GSFC to assess the feasibility, resources, and requirements for the implementation of those remaining. Specifically:

- **Area 2 (Management of the NHFP):**
 - New lines of communications have been established between the NHFP Leads, Space Telescope Science Institute (STScI) Grants Administration (GRA) and NASA HQ personnel in order to streamline the information flow and quickly address concerns or issues that may arise. (Rec.#4)
 - NHFP program has implemented a new mandatory policy for host institutions to offer employment status to the Fellows. (Rec. #5)
 - Documentation has been added to the NHFP page that highlights several key aspects of the program (both from the fiscal and policy aspect). Orientation sessions are now part of the on-boarding process for the Fellows and a private

Slack channel has been created where Fellows (past and present) and Leads can quickly communicate and share useful information. (Rec. #6)

- **Area 3 (Application and Review Processes):**
 - A broader definition of leadership is now included in the announcement of opportunity and the evaluation rubric. Discussions are ongoing to make the language even more inclusive. (Rec. #10)
 - The NHFP review has been conducted purely in remote modality. Data are being collected to investigate the sustainability and efficacy of this effort. (Rec. #14)
 - The NHFP places the highest priority on the quality of the application review and selection process. A new evaluation rubric has been implemented, is publicly available, and reviewer orientation is now part of the process. (Rec. #13, #17 and #18)
 - As mentioned above, review criteria have been published in the form of the rubric. Current NHFP Fellows, in coordination with the Leads, have been pursuing activities aimed at recruiting prospective Fellows from minority serving institutions and smaller research institutions, including mentoring and application preparation sessions. (Rec. #16, #25)
- **Area 4 (Centering Diversity, Equity, Inclusion, and Accessibility in the NHFP):**
 - The NHFP solicitation and the adopted rubric explicitly emphasize the importance of DEIA in evaluating the applications. (Rec. #20 and #27)
 - The Leads performed an initial demographic survey of the 2022 NHFP applicants, as well as accepted and past Fellows: the dataset contains over 1,200 respondents, and includes voluntary data (e.g. PhD year, institutions, gender, race). For subsequent years, all applicants are being asked to fill out a voluntary demographic survey. Also, the annual NHFP symposium includes a feedback session and there is a suggestion box to provide anonymous input. (Rec. #21)
 - NHFP Leads routinely reach out to Chairs and Deans at smaller academic institutions and those classified as Minority Serving Institutions, and have encouraged the Fellows to become ambassadors of the program while attending professional society meetings, including the Society for Advancement of Chicanos/Hispanic and Native American in Science (SACNAS) and the National Society of Black Physicists (NSBP) (Rec. #25). These activities have been funded by the program and do not impact the Fellows' research budgets.
- **Area 5 (Support of the Fellows):**
 - The NHFP website contains a list of institutions that adhere to the employment status request, including providing all the benefits other employees receive at that host institution. (Rec. #31)
 - Fellows can request support to attend professional development activities. These activities have been funded by the program and do not impact the Fellows' research budget. (Rec. #28)

NASA Astrophysics Division has also developed a 10 year timeline to make sure appropriate steps are taken for the consideration and potential implementation of the remaining recommendations (see Appendix A for details). Note that this timeline is expected to evolve as discussions continue.

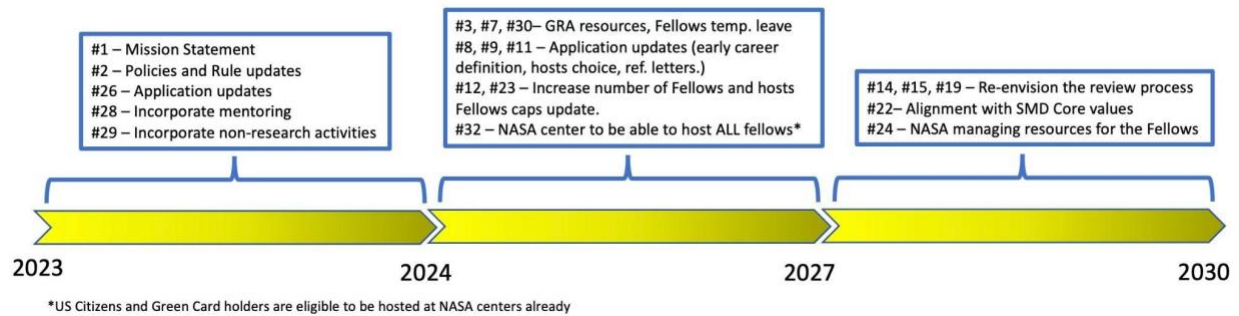


Figure 1: The task force has created a draft timeline for the implementation of the remaining recommendations. This chart is based on the complexity and requirements (e.g. resources, policy changes) that some of the recommendations may entail and does not consider any prioritization.

The following table represents a synthesis of the work done by the task force, the initiatives already taken, the ongoing ones, and the recommendations that will be addressed in the following calendar and fiscal years. This is intended to be a living document, with annual updates prior to the winter American Astronomical Society meetings.

<i>Recommendation</i>	<i>Response</i>
1) The NHFP program should articulate a clear and specific mission statement that is aligned with SMD Core Values. This should be accompanied by revised processes for the selection of Fellows, and an evaluation plan for the Program, that are in turn aligned with the SMD vision. This will require reimagining the nuts-and-bolts processes (application, review, selection, support) through which the Program’s mission is put into practice.	The NHFP program recognizes the importance of a mission statement. NASA Astrophysics and GSFC are discussing with the NHFP, using community input collected in the feedback survey, a mission statement that acknowledges the SMD core values.
2) Review the existing policies and rules of the NHFP within the lens of the mission of the Fellowship, aligning them with the six SMD core values discussed above.	The NHFP task force is aligning its development of the implementation plan with the SMD core values as best applicable to a healthy NHFP program.
3) Provide GRA the needed resources to manage the expanded Program.	Discussions are underway with GRA on how to best support their day-to-day activities, which may require additional funding.
4) Implement a clear process for review and approval of Program policies and policy changes that minimizes surprises and considers implementation issues up-front.	Clear lines of communication have been mapped, and more frequent regular NHFP Leads meetings with GRA, GSFC, and NASA Astrophysics are taking place.
5) The NHFP needs to establish a more centralized management of the	NHFP Leads have improved the communication process with NASA

<p>program with simplified lines of communication, ensure consistency with regard to benefits and employment status, and needs to establish a sole point of contact (POC) within the NHFP to communicate the necessary (or requested) changes to a POC at NASA.</p>	<p>Astrophysics and GSFC, which ultimately is positively impacting GRA work. NHFP has implemented a mandatory policy for hosts to offer employee status. A project manager worked with the Leads and GRA to outline tasks and pathways across the NHFP in order to simplify and rationalize the communications and task structure of the NHFP.</p>
<p>6) Better communication of policies and paths to change them needs to be provided to the Fellows in a clear and consistent way. At the beginning of their tenure, for example, in an orientation session focused on the “need to know” aspects of the Program management and Fellowship tenure, the Fellows should be informed as to who the POCs are and the process for requesting changes.</p>	<p>An FAQ document was created by GRA and posted under the STScI site within the NHFP resource page. Orientation sessions are now featured at the beginning of the program. Fellows and Leads share a private Slack channel, which provides an opportunity for Leads/Fellows to quickly address common questions and share useful information. Fellows also have a “Suggestion Box” where they can make anonymous suggestions.</p>
<p>7) On a case-by-case basis, grant extensions of tenure to the Fellows whose tenure duration is negatively impacted by personal circumstances.</p>	<p>Exceptions have been granted due to special circumstances (e.g. health issues, family care, COVID-19 impacts). Discussion is ongoing to determine what circumstances would qualify for an extension, and how best to address the impact on the budget that this might create.</p>
<p>8) Remove the three-year criterion. Instead, ask applicants to explain in their applications why they should be considered early career scientists.</p>	<p>Extensions of eligibility have been consistently granted since the beginning of the program for medical and family reasons. For the past three years eligibility has been extended for all applicants to four years after PhD to lessen the impact of COVID-19. While the NHFP investigates means to fairly grant extensions for a wide-variety of possible requests, the NHFP has left the maximum time since degree at four years.</p>
<p>9) Do not require host institution specification on application and do the pairing after selection of Fellows. Establish a more structured and accessible mechanism for matching applicants with host institutions and host advisors. For example, discuss with the selected Fellows the appropriate institution after the award, which empowers the Fellows from underrepresented communities to hold</p>	<p>Currently, although the application lists preferred hosts, there is some flexibility in Fellow/host matching, prioritized by the Fellow’s ranking. Fully implementing this recommendation as stated will have significant impacts to the way the NHFP is run. These impacts and how to address them are under discussion by the NHFP task force.</p>

<p>a valuable card for negotiating with the host institution.</p>	
<p>10) Ask the candidates to explicitly address scientific leadership in the application.</p>	<p>A broader definition of leadership is now included in the announcement and the evaluation rubric. Discussions are ongoing to make the language more inclusive. The NHFP task force has started a conversation on how best to define leadership in the context of the broad astronomical community and NASA Core Values.</p>
<p>11) Re-envision the necessity or form of reference letters to, for example, remove or anonymize them; provide guidance (e.g., a rubric) to letter writers to avoid bias; or train the reviewers in recognizing bias in the letters.</p>	<p>The NHFP recognizes the importance of this suggestion and is looking into providing a guide for letter writers.</p>
<p>12) The NHFP should strongly consider increasing the number of Fellowships awarded to reach an oversubscription rate (i.e., submission numbers vs. selection numbers) more consistent with those of NASA's other competitive programs and similar Fellowships.</p>	<p>The NHFP would support this recommendation; however, additional funding would have to be identified.</p>
<p>13) In considering revisions to the NHFP review and selection process, NASA should not be overly concerned with the impact of revised, and potentially more involved, procedures on reviewer acceptance rates.</p>	<p>The NHFP and NASA Astrophysics place the highest priority on the quality of the application review and selection process. A new grading rubric has been implemented and an early reviewer orientation was introduced in the 2023 year's review process. The NHFP is presently investigating ways to reduce the workload of reviewers to allow the program to put additional requests on the reviewers without negatively impacting the evaluation process.</p>
<p>14) Before returning to a fully in-person review process, the Leads should carefully consider the benefits of virtual review panels and the impact that returning to in-person panels may have on the diversity (both demographic and institutional) of the reviewers.</p>	<p>The NHFP program is collecting input from current and past (within 4 years) reviewers on the past three virtual reviews. While the plan is to have fully virtual panels in 2024, the Leads plan to have an updated review process after the pandemic impact is diminished or is better understood.</p>

<p>15) Ensure that revised review criteria are clearly aligned with the Program mission, and SMD and NASA priorities and vision statements.</p>	<p>A new NFHP Selection rubric was implemented for 2022 and updated for 2023. Further progress requires the completion of an NHFP Mission Statement, which is under development.</p>
<p>16) Specific, transparent review criteria will help to ensure that a greater number of qualified applicants, particularly those from underrepresented groups, are able to see the alignment of their experience and expertise with review criteria. Greater transparency will also help individuals who do not have inside knowledge about what makes a good proposal produce more effective applications.</p>	<p>The rubric, upon which the grading of applications is based, has been published. The Leads have worked with the Fellows who run a workshop to help prospective candidates apply, with special focus on the recruiting of candidates from Minority Serving Institutions and smaller research institutions. The Fellows have also made a large collection of past successful applications available on the web and provide mentoring to applicants. NHFP is working to ensure these activities are sustainable over the long term.</p>
<p>17) Enable reviewers to meet before triage to establish a shared set of evaluation criteria and to discuss how to interpret these criteria in light of the NHFP mission and SMD Core Values. Additional discussions about reviewer biases or concerns about applicant proposals, and how to mitigate them, should also occur.</p>	<p>NHFP has implemented an early virtual orientation for reviewers before triage grading and setting up a private workspace for the reviewers to ask questions and discuss policy before the panels meet.</p>
<p>18) After creating a vetted rubric, require reviewers to evaluate a combination of successful and unsuccessful anonymized applications from previous cycles before the triage stage to allow for calibration and discussions of expectations and review scores. The shared expectations should then carry over to the review panel discussions.</p>	<p>The NHFP Leads concur with the intent of this recommendation. The orientation session described in the response to #17 gives the reviewers a chance to discuss issues related to grading and expectations using the current set of applications. It also provides an opportunity for reviewers to receive clarification about the rubric itself and develop shared expectations. In addition, reviewers can use their <i>private workspace</i> to discuss general issues related to the grading and evaluation of proposals.</p>
<p>19) NASA should re-envision the NHFP review process to incorporate best practices in unbiased, holistic evaluation. This exercise should include experts from the social scientists and may result in, e.g., implementing a dual-anonymous</p>	<p>The Leads, GSFC and NASA Astrophysics are discussing how best to implement this recommendation within the budgetary and personnel constraints of the NHFP.</p>

<p>selection review; moving to a two-stage application process; anonymizing or removing entirely letters of recommendation; removing the statement of past work and/or CV components of the application; requiring applicants to not report numbers (e.g., citation rates or h-index); incorporating interviews for finalists; and enabling multimedia submissions; or a combination thereof. The re-envisioned review process would necessarily have to implement and build-in clear mechanisms to reduce bias, including explicit rubric criteria and protocols that explain how the interview process should be conducted (e.g., cameras off during video interviews).</p>	
<p>20) Consistent with a definition of excellence that features collaborative, inclusive leadership in addition to science, an explanation of previous and planned DEIA efforts should be a required component of the Fellowship application and review. The task assigned to the DEIA component should be broadly defined to allow applicants to describe, for example, personal experiences that demonstrated perseverance to stay in the field or individual efforts that resulted in enhanced access for members of underrepresented groups to scientific knowledge, activities, or facilities.</p>	<p>The 2023 Announcement of Opportunity contained a rubric that clearly mentions that any information related to DEIA should be “strongly and favorably considered” when evaluating the candidate packets.</p>
<p>21) Collect demographic information to evaluate the efficacy of any revised application structures and probe bias. Additional information could be collected during exit interviews.</p>	<p>Fellows submit a final report at the end of their NHFP term, where they have an opportunity to provide feedback on the program. The annual symposium also includes a feedback session and there is a suggestion box to provide anonymous input. The NHFP program, through the Leads, has been collecting voluntary demographic data, but it will take a number of years to analyze the impact of the implemented changes.</p>

<p>22) The Program should revise the entire structure of the NHFP (application material, evaluation process, selection criteria) through the lens of inclusive leadership and in alignment with the similar SMD core values. This most likely will require external expert help from specialists in the field who can identify needed processes.</p>	<p>The current rubric is an important first step in this direction and it was developed with the aid of an STSci IDEA officer. The NHFP Leads, GSFC, and NASA Astrophysics are discussing how best to further implement this recommendation within the budgetary and personnel constraints of the NHFP.</p>
<p>23) NASA should reconsider allowing affiliated institutions to host four total Fellows per year, every year, and instead hold the combined total to the same cap as it does for other institutions.</p>	<p>The NHFP program acknowledges the importance of this recommendation. The program is examining the community input collected in the Summer 2022 feedback survey to identify, if they exist, the most appropriate mechanisms to implement this recommendation.</p>
<p>24) NASA should develop centralized avenues to provide resources (e.g., telescope access, computational resources) to Fellows at institutions that lack them. NASA should also provide incentives to Fellows attending smaller institutions and better communicate the advantages those institutions can provide. Additionally, consider joint appointments with institutions that are geographically close to one another.</p>	<p>The NHFP program is discussing ways to incentivize Fellows to engage with smaller institutions as well as the budgetary requirements to enable access to the scientific resources they need. NASA Astrophysics is discussing the necessary infrastructure to enable joint appointments or shared resources with primary hosts.</p>
<p>25) To reach a wider applicant pool, the NHFP Leads should establish proactive outreach activities (e.g., workshops at meetings of the AAS, the Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS), and the National Society of Black Physicists (NSBP); virtual workshops) for applicants and other stakeholders (e.g., reviewers, letter writers) in advance of the deadline to provide information about the application process. This information could include how to address rubric criteria in the application materials, as well as information about the review process.</p>	<p>NHFP Leads have reached out to Deans and Chairs at small research institutions as well as Minority Serving Institutions to increase the pool of applicants. Fellows are proactively becoming ambassadors of the program while attending professional society meetings centered on marginalized groups. Fellows also have held mentoring sessions for minority groups as well as workshops for anyone interested over the past 2 years to give information on the program and its application, as well as answer questions from potential applicants. A pilot program for Fellows, funded outside their research budgets, was enacted in FY23, to encourage them to represent the NHFP at meetings focused on under-represented</p>

	groups. Subsequent implementation will likely require additional resources.
26) Allow applicants to express interest in both research and additional activities (e.g., outreach, mentoring, service) as part of the application. This may provide opportunities for the Fellowship tenure at smaller host institutions or NASA Centers that actually may be a better fit for those elements. Great science can be and is done at smaller institutions.	Partial implementation started with the NHFP class of 2022 as part of the rubric. Discussion is ongoing to find adequate resources to sustain and manage these activities in the future.
27) Remove references to academic environments from the AO text and the policy and guideline documents, and make the language inclusive of other non-academic hosts.	This was implemented for the 2023 Announcement of Opportunity.
28) The NHFP should institute a formalized program of professional development support and mentorship of Fellows. This could include conferences and workshops, online or in-person workshops, and individual mentoring from former and current Fellows.	Partial implementation began in 2022. The Fellows self-organized mentoring workshops. In addition, the NHFP implemented a pilot program in FY23 with funding outside the Fellows research budget to enable Fellows to participate in professional development activities. Discussion is ongoing among NASA Astrophysics, GSFC and the NHFP Leads to find adequate resources to sustain and manage these activities in the future.
29) The NHFP should make outreach, teaching, mentoring, and other aspects of career development an integral part of the program and encourage/require host institutions to make these available to Fellows.	Considering the inclusion outreach, teaching, and mentoring activities began as part of FY23. See the response to recommendation #28. NHFP Leads are discussing with NASA Astrophysics and GSFC about resources and infrastructure needed for encouraging host institutions to support such efforts.
30) Remove the restriction that prevents Fellows from taking a leave from the program, allowing them to attempt other career pursuits or address sudden family situations.	There is an ongoing conversation between the Leads, NASA Astrophysics, and GSFC regarding the length of the leave, the continuation of benefits while on leave, and the implication for the number of Fellows at a specific host institution.
31) Leveraging its status as a federal funding Agency, NASA should require that Fellows be offered employment status and be given full	Implemented: the NHFP website contains a list of institutions that adhere to the employment status request, including

<p>fringe benefits by the host institution. Current efforts to initiate this by NASA represent a step in the right direction. Consider also providing strong encouragement to host institutions to offer healthcare to significant others and paid parental leave or disclose their policy for benefits etc. so the Fellows can make an informed decision.</p>	<p>providing all the benefits other employees receive at that host institution.</p>
<p>32) Create a policy that allows NASA Centers to host NHFP Fellows directly. NASA Centers may not be able to host Fellows of all nationalities. Non-US citizens considering one of these as a host institution should contact the institution to make sure that they can indeed be hosted there. Even if foreign Fellows may not be allowed to choose a Center as a host, they can choose other institutions, which is already the practice at JPL and STScI, for instance.</p>	<p>Implemented for US Citizens and green card holders. Ongoing exploration by NASA Astrophysics and GSFC of options to employ other foreign nationals.</p>